

**Please amend the claims as follows:**

1. (amended) A linear motor comprising:

an outer case;

a stator installed at an inner side the outer case and having a first and a second armature coil parts, said the first armature coil part of the stator having an annular shape complementarily fittable within the outer case, and said the second armature coil part of the stator being assembled in the outer case in a perpendicular direction to the first armature coil part;

a rotor including a first, second and third shafts assembled to be coaxial with the first and the second armature coil parts of the stator;

a first permanent magnet part having a plurality of permanent magnets; and

a second permanent magnet part having a plurality of permanent magnets assembled on an outer circumferential surface of the third shaft.

4. (amended) The linear motor according to claim 1, wherein the first, second and third shafts are provided with a neutral zone on the second shaft providing a predetermined interval between the first permanent magnet part assembled on the outer circumferential

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cancel.

surface of the first shaft and the second permanent magnet part assembled on the outer circumferential surface of the third shaft.

5. (amended) The linear motor according to claim 1, wherein the first permanent magnet part is arranged in a ring on an outer circumferential surface of the first shaft.

6. (amended) The linear motor according to claim 1, wherein the second permanent magnet part is arranged on an outer surface of the third shaft in a vertical direction.

#### R E M A R K S

Claims 1 and 4 to 6 remain in this application.

All claims have been amended in accordance with the Examiner's helpful suggestions to bring them into compliance with 35 U.S.C. 112, second paragraph.

Claims 1 to 4 and 6 stand rejected as being unpatentable over admitted prior art in view of Hammer '596. The previous rejection based on Nagai has been withdrawn by the Examiner.

The rejection over the prior art in view of Hammer is respectfully traversed.

The differences between the present invention contrasted with the cited reference are as follows:

1) The present invention is directed to a linear motor having a plurality of permanent magnets assembly on a shaft which can generate linear and rotary motion.

The rotor 20 of the present application is formed coaxially with first, second, and third shafts 21, 22, 23.

The first permanent magnet 21A is formed as a ring-type, and the second permanent magnet 23a is arranged on the outer circumferential surface of the third shaft 23 in a vertical direction in the rotary motion zone.

The first permanent magnet and the second permanent magnets are separately constructed on the outer circumferential surface of the shaft to be assembled, so that the linear movement of the linear motor can be precisely controlled when the linear motor is linearly driven, and the permanent magnet is assembled in the rotary motion zone.

2) U.S. Patent No. 5,093,596 to Robert Hammer:

Hammer '596 discloses a combined linear-rotary direct drive step motor that is capable of providing both unrestricted rotary motion and stepped linear motion over a predefined range, for

example, along a portion of the longitudinal axis of the rotor shaft.

The rotary step motor of Hammer '596 uses laminations having 12 poles with a 3 phase rotary section as shown in Fig. 2. Also, the rotary step motor stator coil is shown by reference number 130 in Fig. 1B.

The key feature of Hammer '596 is the configuration of the teeth for the separate phases in both the stator and rotor of the linear motor. The stator and rotor of Hammer '596 are formed from laminations. Also, the linear step motor stator coil is shown by reference number 131 in Fig. 1B.

In Hammer '596, both rotary motion and linear motion are achieved. However, the basic constructions of the stator and rotor are different from those of the present invention. That is, the present invention uses a linear motor having the first and the second permanent magnets, rather than using a rotary step motor having the type of laminations of Hammer '596.

Furthermore, the admitted prior art does not supply the teachings missing in Hammer '596.

Claim 5 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Hammer '596, and further in view of Sekiyama '124.

This rejection is respectfully traversed. A conclusion of obviousness requires motivation to combine reference teachings other than hindsight. The Examiner's suggested combination of APA, Hammer and Sekiyama lacks this requisite motivation.

For the foregoing reasons, reconsideration of the rejections of record is respectfully requested, and an early notice of allowance is earnestly solicited.

A telephone interview was conducted with the Examiner Addison on June 5, 2002, and it was agreed that the due date for response to the Office Action of December 28, 2001, and the substitute Office Action of May 30, 2002, is June 30, 2002. Therefore, no extension fees are due for this timely filed response.

#### **Conclusion**

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

In the event there are any matters remaining in this application, the Examiner is invited to contact Mr. Joseph A. Kolasch, Registration No. 22,463 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

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overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By 

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Attachment: Version with Markings to Show Changes Made

(Rev. 02/06/01)